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(54) Closed combustion gas fire

(57) A closed combustion gas fire (1) comprising a combustion chamber (2) fitted with first closing means (6) comprising a transparent panel (22), by means of which the combustion chamber can be sealed gastight from a space in which the gas fire is disposed, a gas control block with a burner at the bottom of the combustion chamber for burning gas, and second closing means (16) for hiding at least the gas control block at least substantially from view, wherein the second closing means extend along the height of the transparent panel and comprise a transparent portion on the side of the transparent panel that faces away from the combustion chamber.

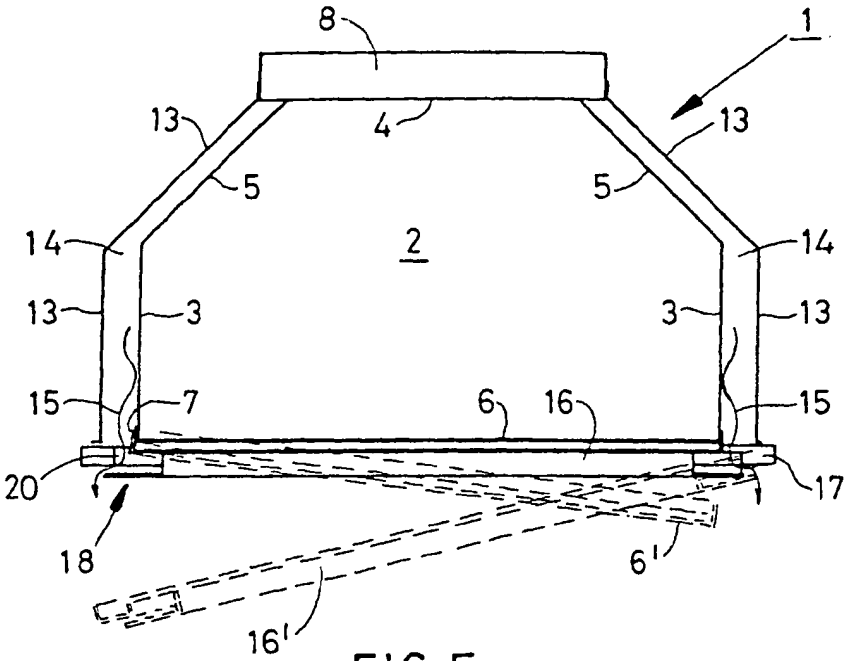

FIG. 5

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Description

[0001] The invention relates to a closed combustion gas fire comprising a combustion chamber fitted with first closing means comprising a transparent panel, by means of which the combustion chamber can be sealed gastight from a space in which the gas fire is disposed, a gas control block with a burner at the bottom of the combustion chamber for burning gas, and second closing means for hiding at least the gas control block at least substantially from view.

[0002] Such gas fires are generally known, they are for example marketed under the name of Castello by the present applicant. Within the framework of the present invention, the term closed combustion is understood to mean the situation in which the oxygen that is needed for the combustion process is not drawn from the space within which the gas fire is disposed, but supplied to the burner via the gas control block of the gas fire from the outside of the space in question, usually by means of a channel which extends through an outside wall or a roof. In order to obtain such closed combustion, a closed, gastight combustion chamber must be used. Since an important quality aspect of a gas fire according to the invention is the view of the flames that is provided, the combustion chamber according to the prior art is sealed gastight on one side by first closing means comprising a transparent panel, which is mounted in a casing, for example, with a gastight seal being provided. The transparent panel also transmits radiation heat from the combustion process. The second closing means are usually formed by a downwardly pivotable flap present under the casing. When said flap is pivoted downwards, access can be gained to the buttons of the gas control block, which can be operated for controlling the burner disposed inside the combustion chamber, at the bottom thereof. The flap is expressly not intended for realising a gastight seal, but only for hiding the gas control block and other functional elements from view. Depending on the concrete embodiment of the gas fire, the casing with the transparent panel on the one hand and the closing means on the other hand can be visually distinguished from each other to a greater or smaller extent, at least because of the seam that is present between the two elements. At the time of the present invention, an increased consumer demand for more austere designs can be observed. Within this framework, the seams between the second closing means and the first closing means, for example in the form of a casing with a transparent panel, are increasingly being considered objectionable.

[0003] A second disadvantageous aspect of prior art gas fires is the difficult manner in which the opening and in particular the subsequent closing of the first closing means takes place. Said opening and closing may for example be desired in the case of installation and maintenance work or when the inner side of the transparent panel is to be cleaned. With the existing gas fires, the first closing means are made up of a frame work, by means of which the glass panel is pressed against the housing. Present between the panel and the frame work on the one hand and the housing on the other hand is a seal, for example in the form of a glass fibre cord, which usually becomes detached from the surrounding elements upon removal of the frame work and which needs to be correctly positioned again upon closing of the first closing means so as to obtain a proper seal. In practice this appears to be time-consuming and difficult, which has an inhibiting effect, for example as regards the cleaning of the inner side of the glass panel.

[0004] In addition to that, the manner of installation of prior art gas fires constitutes a drawback of such gas fires. It is important in this connection that a certain draught is obtained in the discharge channel for the combustion gases independently of the length of the discharge channel. According to the prior art, this is achieved by making use of a metal plate provided with a hole, which is slid before the inlet of the discharge channel at the top of the housing, so that the pipe diameter is locally reduced, as it were. Since the length of the discharge channel may vary with each new situation, of course, every gas fire is supplied with a number of plates, from which the installer selects and fits the correct one on the basis of the installation instructions. In practice, this method has appeared to lead to complaints about incorrect adjustment and also to questions from installers. In addition, this method led to a waste of plates, and thus of money, because only one plate was used whilst the other plates were discarded.

[0005] The object of the invention is to provide a gas fire which is capable of meeting the aesthetic requirements of the consumer at the time of the invention, and to provide a solution for the drawbacks as described above, whether or not in a preferred embodiment. In order to accomplish that objective, the invention is characterized in that the second closing means extend along the height of the transparent panel and comprise a transparent portion on the side of the transparent panel that faces away from the combustion chamber. Preferably, the transparent portion is simply an opening, but within the framework of the invention it could also be a second transparent panel. This characteristic aspect makes it possible to "hide" the transparent panel of the first closing means behind the second closing means, which thus determine the visual qualities of the gas fire to a significant extent. It is noted in this connection that the part of the first closing means that is positioned behind the transparent portion of the second closing means remains exposed to view, of course. Since there is no longer any question of separate parts which separately screen off the combustion chamber and the gas control block, the presence of a seam between such parts is no longer required, thus enabling a more austere design. It will be understood that the use of the first closing means comprising the transparent panel is necessary within the framework of the invention, and that their

function cannot be taken over by the second closing means, since the combustion chamber must remain closed upon operation of the gas control block.

[0006] A very user-friendly embodiment is obtained if the second closing means are pivotable about a vertical pivot on a first side of the combustion chamber. The opening and closing of the closing means can preferably take place manually, without having to use any tools.

[0007] The same advantage is obtained if the first closing means are pivotable about a vertical pivot on a second side of the combustion chamber. It is noted in this connection that first closing means thus configured are also advantageous if the gas fire is otherwise in accordance with the prior art. Generally, opening up of the combustion chamber by removing or at least opening the first closing means comprising the transparent panel preferably takes place by means of a tool. The reason for this is to prevent the combustion chamber being opened undesirably. The required tool, such as an Allen key, is preferably detachably connected to the gas fire, so that it is directly available at all times.

[0008] According to a very advantageous preferred embodiment, the first side and the second side are located on opposite sides of the combustion chamber. This is advantageous in particular from a constructional point of view, because it provides maximum possibilities for making those provisions that are required to enable pivoting of the closing means and the frame work.

[0009] A very advantageous preferred embodiment of the gas fire according to the invention is characterized in that the first closing means comprise a frame work which surrounds the transparent panel at least in part, with a first seal being present between the frame work and the transparent panel along the circumference of the transparent panel, which seal is connected both to the frame work and to the transparent panel by means of an adhesive. An important advantage that is obtained in this way is the fact that the frame work, the first seal and the transparent panel remain interconnected if the combustion chamber is opened up through manipulation of the frame work with the transparent panel, for example for the purpose of removing soot deposits present on the inner side of the transparent panel. As a result, it is no longer necessary to reassemble the frame work, the first seal and the transparent panel when the combustion chamber is to be closed again. A frame work thus configured can also be used advantageously in prior art gas fires.

[0010] Preferably, a second seal is present between the transparent panel and a circumferential edge of the combustion chamber, which seal is connected either to the transparent panel or to the circumferential edge of the combustion chamber by means of an adhesive. Also in this case, it is advantageous that no separate operations are required for correctly positioning the second seal when the combustion chamber is being closed again after having been opened. The first and the second seal are preferably in the form of a ribbon and comprise glass fibre, for example.

[0011] In order to enable an efficient and optimum adjustment of the gas fire according to the invention in a simple manner, the combustion chamber preferably connects to a discharge channel for combustion gases, wherein an adjusting element is movable and the location of the transition between the combustion chamber and the discharge channel for varying the through-flow area between the combustion chamber and the discharge channel. It is possible to adjust the through-flow area required for effecting an optimum draught by means of one and the same adjusting element. Such an adjusting element can also be used advantageously in combination with prior art gas fires.

[0012] Preferably, marks are present in the direct vicinity of the adjusting element for moving the adjusting element to the correct position. Said marks may be in the form of a scale, for example, on which the length of the discharge channel is indicated, on the basis of which the adjusting element can be moved to the correct position.

[0013] The invention will now be explained in more detail by means of a description of a preferred embodiment of the invention, in which reference is made to the following figures.

[0014] Figure 1 is a front view of a gas fire.

[0015] Figure 2 shows a gas fire of Figure 1 without a sight door.

[0016] Figure 3 shows the gas fire of Figure 1 without a sight door and without a closing door.

[0017] Figure 4 is a sectional view along the line IV-IV in Figure 1.

[0018] Figure 5 is a sectional view on a slightly large scale along the line V-V in Figure 1.

[0019] Figure 6 shows the detail VI in Figure 4.

[0020] Figure 7A is a top plan view of the area surrounding the transition between the discharge pipe and the combustion chamber.

[0021] Figure 7B is a side elevation of Figure 7A.

[0022] Figure 7C is a side elevation of Figure 7B.

[0023] Figures 1, 4 and 5 show a gas fire 1 according to the invention, or at least the main components thereof, in front view and in cross-sectional view. The heart of the gas fire is formed by the combustion chamber 2. The combustion chamber 2 is surrounded by two inner side walls 3, a rear wall 4 and two inclined inner side walls 5, which join the respective inner side walls 3 and the rear wall 4 at their ends. On the front side, the combustion chamber 2 is closed by a closing door 6, which is pivotable about a vertical pivot 7 on the outer side of one of the two inner side walls 3. In Figure 5, a partly open position 6' of the closing door 6 is illustrated in dotted lines. The rear wall 4 also forms a side wall for a channel 8 that is present behind the rear wall 4, via which channel 8 oxygen is supplied to a burner unit (not shown), which is connected to a gas control block present under the burner, which gas control block is positioned under the compression chamber 2, between the

four legs 9 by means of which the gas fire rests on a supporting surface. At the upper side, the combustion chamber 2 is bounded by a ceiling 10, to which a discharge pipe 11 for combustion gases connects. The discharge pipe 11 is surrounded by a supply pipe 12 for oxygen, which directly connects to the channel 8. Present on the outer sides of the inner side walls 3 and the inclined inner side walls 5 and also of the ceiling 10 are outer walls 13, so that convection channels 14 are formed therebetween, which convection channels open on the front side of the gas fire 1. The air that is heated in the convection channels 14 as a result of the combustion process taking place inside the combustion chamber 2 subsequently enters the space in which the gas fire 1 is disposed, as is indicated by the curved arrows 15.

[0024] Present on the outer side of the closing door 6 is a sight door 16, which is pivotable about a vertical pivot 17. Numeral 16' indicates a partly open position of the sight door 16 as illustrated in dotted lines. As is apparent in particular from Figure 1, the dimensions of the sight door are such that the entire combustion chamber 2 including the surrounding walls 2 as well as the gas control block and other functional parts, such as a gas hose and a receiver for receiving remote control signals, are screened off. Only a very limited lower portion of the legs 9 is still exposed to view. The gas fire 1 can be disposed more or less free in a space, whilst on the other hand it is also possible to surround the gas fire with a frame, in which the frame closely abuts against the side edges and the upper edges of the sight door 16. The sight door 16 mainly consists of a frame 18, which surrounds an opening 19. The frame 18 is configured in such a manner that a passage 20 extends along the circumferential edge of the sight door 16, which passage allows heated air to pass, as is indicated by the arrow 15. A user of the gas fire 1 can gain access to control elements, such as rotary knobs of the gas control block present at the bottom side of the combustion chamber 2, by opening the sight door 16. It will be understood that the opening or closing of the sight door 16 does not have any influence on the closed character of the combustion chamber 2, which is necessary for the closed combustion process.

[0025] As is shown in particular in Figure 2, also the closing door 6 consists of a frame 21 surrounding a glass panel 22. The frame 21 mainly consists of an angle section 23 (see Figure 6). The connection between the glass panel 22 and the angle section 23 has been effected via a glass fibre cord 24 extending along the circumferential edge of the glass panel 22, which is glued to the inner side of the vertical portion of the angle section 23 and to the glass panel 22 by means of a suitable glue, for example a silicone-based glue. The use of the glass fibre cord 24 makes it possible to absorb the thermal stresses resulting from the differences in the expansion coefficients of the angle section 23 and the glass panel 22, whilst in addition the required gastightness can be achieved. A glass fibre cord 25 is likewise present on the inner side of the glass panel 22, which cord is glued to the glass panel. In its closed position, the closing door 6 is pressed against a flanged circumferential edge 26 on the front side of the combustion chamber 2 by clamping means (not shown). Such clamping means may be provided by using Allen screws in a manner which may be considered to be known to a person skilled in the art. The clamping action provides a gastight seal between the combustion chamber 2, or at least the stationary walls thereof, and the closing door 6 in the closed condition of the closing door 6, which is essential for the proper functioning of a closed combustion process. Opening and closing of the closing door 6 will only be necessary in a very limited number of situations, for example if the user wishes to clean the inner side of the glass panel 22. As an alternative to the above-described situation, in which the glass fibre cord 25 is glued to the glass panel 22, it is also possible to connect the glass fibre cord 25 to the flanged circumferential edge 26, preferably, but not necessarily so, by means of a glued joint. In such a situation, the glass panel 22 will abut against the glass fibre cord 25 in the closed position of the closing door 6. The use of glued joints results in a connection between the angle section 23 and the glass panel 22 that will remain intact also when the closing door 6 is opened.

[0026] Figures 7A-7C show in detail the situation around the transition area between the combustion chamber 2 and the outlet 11. Since the length of a discharge system for the combustion gases connecting to the outlet 11 may vary, and since said length has a strong influence on the draught effect, it is desirable to influence the through-flow area 27 (hatched in the figure) so as to effect the same degree of draught for every gas fire 1, independently of the length of the discharge system. Figures 7A-7C show that to this end a sliding system is provided which comprises a slide 28 capable of movement within guides 29 connected to the inner side of the ceiling 10. Movement can take place in the directions indicated by the double arrow 30. The slide 28 is provided with a flanged edge 31 at one end, which makes it possible to operate said slide. Movement of the slide 28 influences the dimension of the through-flow area 27, which in turn influences the degree of draught of the discharge system. A scale 32 is arranged on the inner side of the ceiling 10. Said scale 32 may indicate the various possible lengths of discharge systems, for example, so that an installer can easily adjust the correct through-flow area 27 upon installation of the gas fire 1 by moving the flanged edge 31 to the position of the indication on the scale 32 that corresponds to the length of the discharge system. Such a system furthermore makes it possible to easily and quickly change a setting afterwards, which may be necessary because theory and practice are not quite the same, for example.

Claims

1. A closed combustion gas fire comprising a combustion chamber fitted with first closing means comprising a transparent panel, by means of which the combustion chamber can be sealed gastight from a space in which the gas fire is disposed, a gas control block with a burner at the bottom of the combustion chamber for burning gas, and second closing means for hiding at least the gas control block at least substantially from view, **characterized in that** the second closing means extend along the height of the transparent panel and comprise a transparent portion on the side of the transparent panel that faces away from the combustion chamber.

2. A gas fire according to claim 1, **characterized in that** the second closing means are pivotable about a vertical pivot on a first side of the combustion chamber.

3. A gas fire according to claim 1 or 2, **characterized in that** the first closing means are pivotable about a vertical pivot on a second side of the combustion chamber.

4. A gas fire according to claims 2 and 3, **characterized in that** the first side and the second side are located on opposite sides of the combustion chamber.

5. A gas fire according to any one of the preceding claims, **characterized in that** the first closing means comprise a frame work which surrounds the transparent panel at least in part, with a first seal being present between the frame work and the transparent panel along the circumference of the transparent panel, which seal is connected both to the frame work and to the transparent panel by means of an adhesive.

6. A gas fire according to any one of the preceding claims, **characterized in that** a second seal is present between the transparent panel and a circumferential edge of the combustion chamber, which seal is connected either to the transparent panel or to the circumferential edge of the combustion chamber by means of an adhesive.

7. A gas fire according to any one of the preceding claims, **characterized in that** the combustion chamber connects to a discharge channel for combustion gases, wherein an adjusting element is movable at the location of the transition between the combustion chamber and the discharge channel for varying the through-flow area between the combustion chamber and the discharge channel.

8. A gas fire according to claim 7, **characterized in that** marks are present in the direct vicinity of the adjusting element for moving the adjusting element to the correct position.

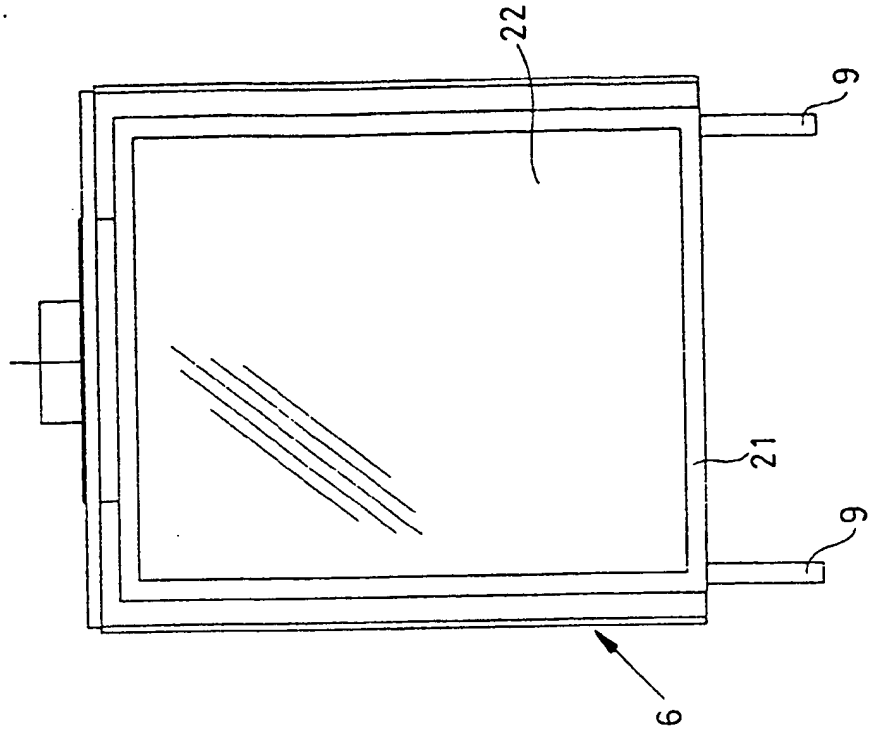

FIG.2

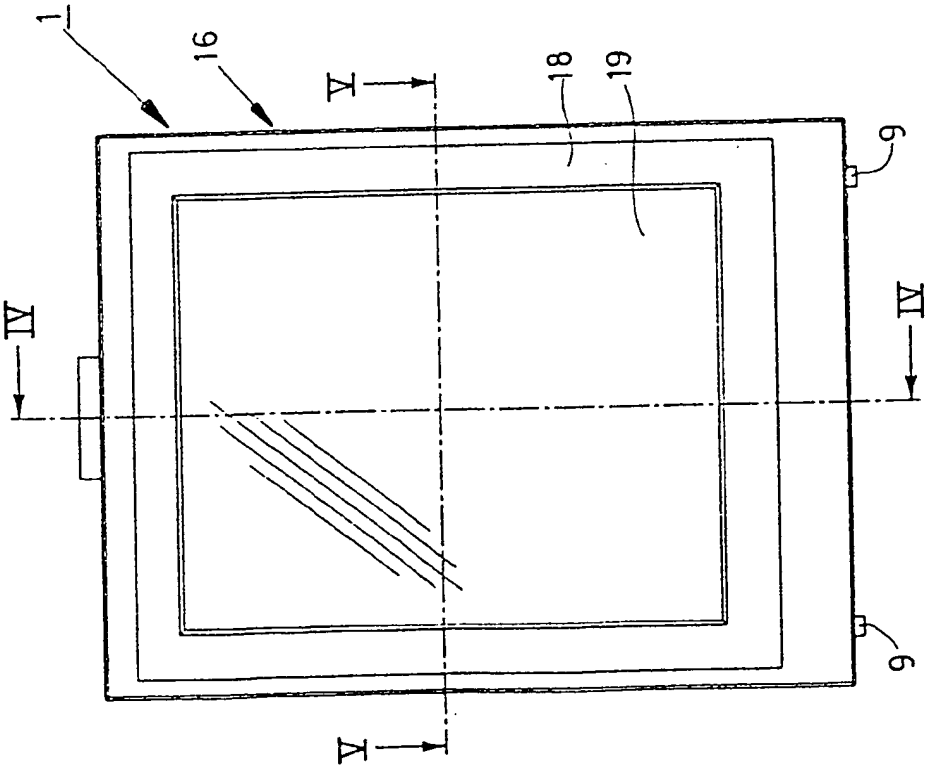

FIG.1

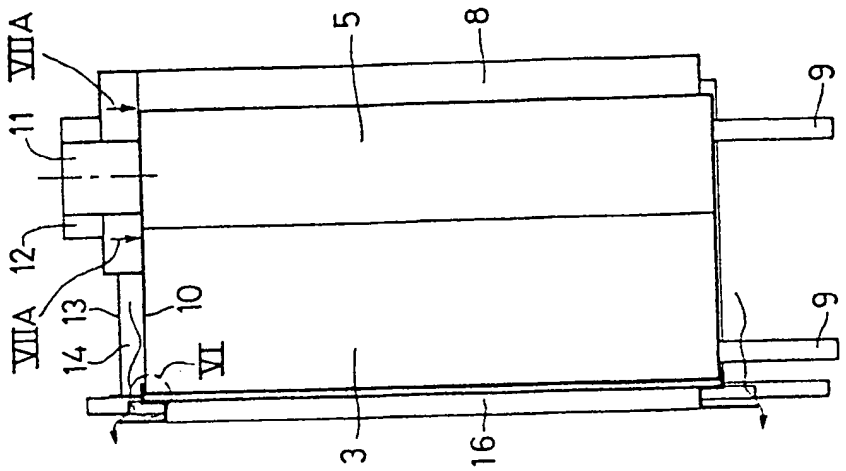

FIG. 4

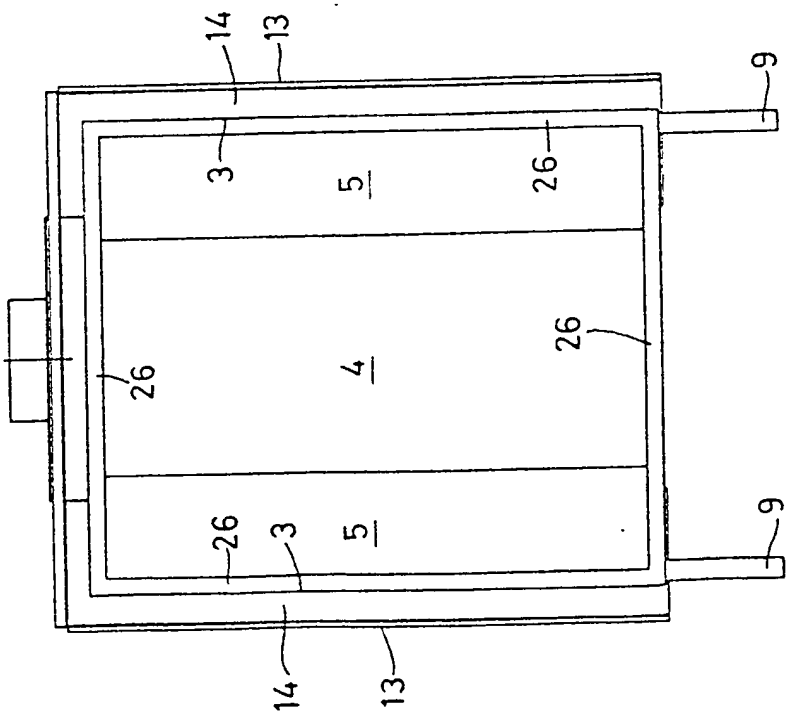

FIG. 3

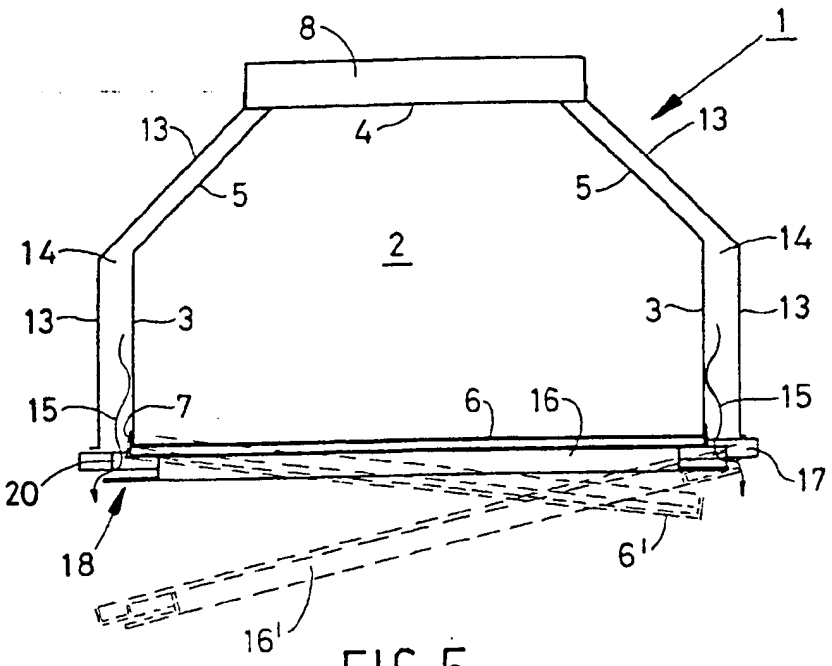

FIG. 5

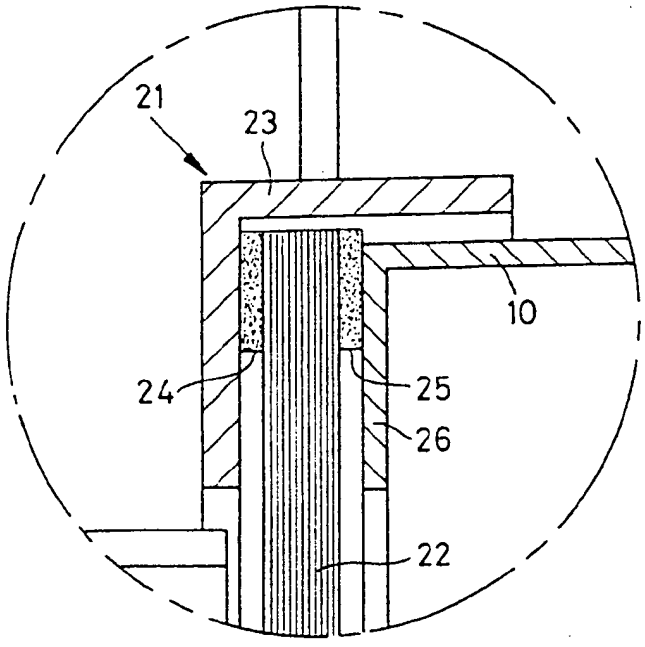

FIG. 6

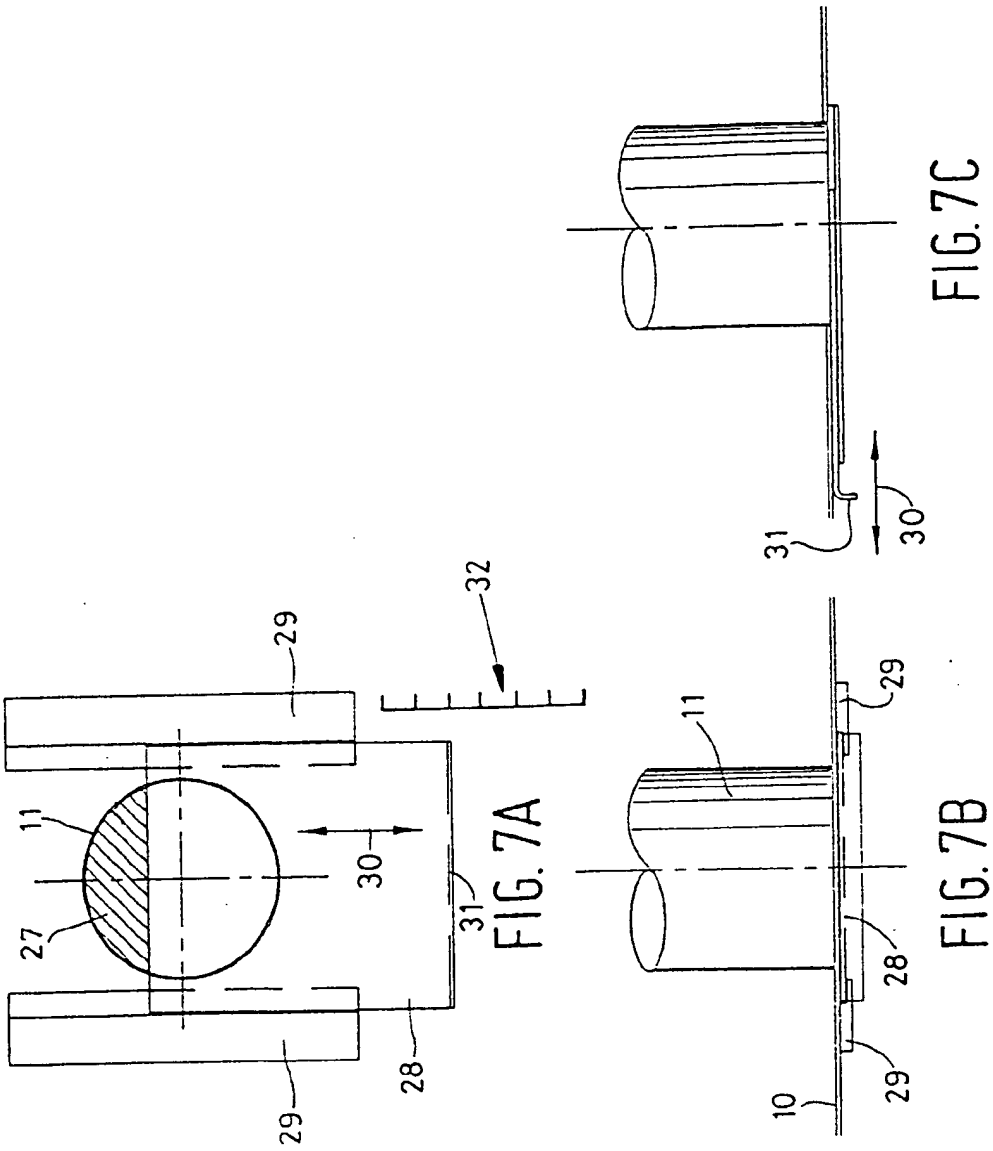

FIG. 7A

FIG. 7B

FIG. 7C